JEPPIAAR ENGINEERING COLLEGE

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

DIABETES, BLOOD PRESSURE, AND HEART DISEASE PREDICTION AND DIAGNOSIS USING WEB APPLICATION

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ABSTRACT

Diabetes, high blood pressure, and heart disease using Machine learning has helped in predicting and diagnosing the diseases, and this project aims to leverage this technology to develop a web application that predicts the risk of diabetes,high blood pressure, and high cholesterol. The application will provide users with an intuitive interface to input their health data, such as age, gender, body mass index (BMI), blood pressure, fasting glucose, and lipid profile. The machine learning models used in the application will be trained on a large dataset of health records and will use a variety of features to predict the risk of each disease and provide suitable diagnosis in the further more records given.

OBJECTIVE

- We can determine the prediction and diagnosis of Daibetes, Blood Pressure and Heart Disease using an application which gets input from the user such as age, gender, body mass index (BMI), blood pressure, fasting glucose, and overall health data profile. The machine learning models used in the application will be trained on a large data set of health records and will use a variety of features to predict the risk of each disease. The application will provide users with a clear and easy-to-understand prediction of their disease risk and will also provide recommendations for lifestyle changes that may help reduce their risk. The application will be tested on a sample populations to validate its accuracy and effectiveness in predicting disease risk.

LITERATURE SURVEY

S.NO	TOPIC	CONTEXT	AUTHOR	YEAR
1.	Implementation of Diabetic Retinopathy Prediction System using Data Mining	Blindness due to Diabetic Retinopathy (DR), this survey is based on proper eye inspection and early detection using Data Mining techniques. Major application on Neural Network and naive Bayes of classification.	Siddharekh S. Patil, Kalpana Malpe.	2019
2.	Diabetic Patient Prediction using Machine Learning Algorithm	Database construction of Diabetic Mellitus affected patients using machine learning techniques,algorithms and Statistical approach for early prediction of old and new datasets. For experimental analysis, Logistic Regression, Tree Classifier and Gradient Boosting used according to diagnostic measurements. Applied algorithm for comparison and accuracy	Malini M, Gopalakrishna B, Dhivya K; Naveena S	2021

EXISTING SYSTEM

THEORY:

The existing system is an android application that gets input and predicts diabetes is there or not. It contains only one module, which is diabetes

DISADVANTAGES :

1. Application requires installation, leading to unnecessary reduction of data storage.
2. Complexity of systems and measurements.(Non user friendly for Elderly or children)
3. May involves cost of application.
4. Constant system reload due to the complexity of the applications.
5. Default in proper diagnosis

PROPOSED SYSTEM

THEORY:

The Proposed system is a Web application not only predicts Diabetes but also predicts and diagnosis blood pressure and Heart Disease. And this system works under three modules:

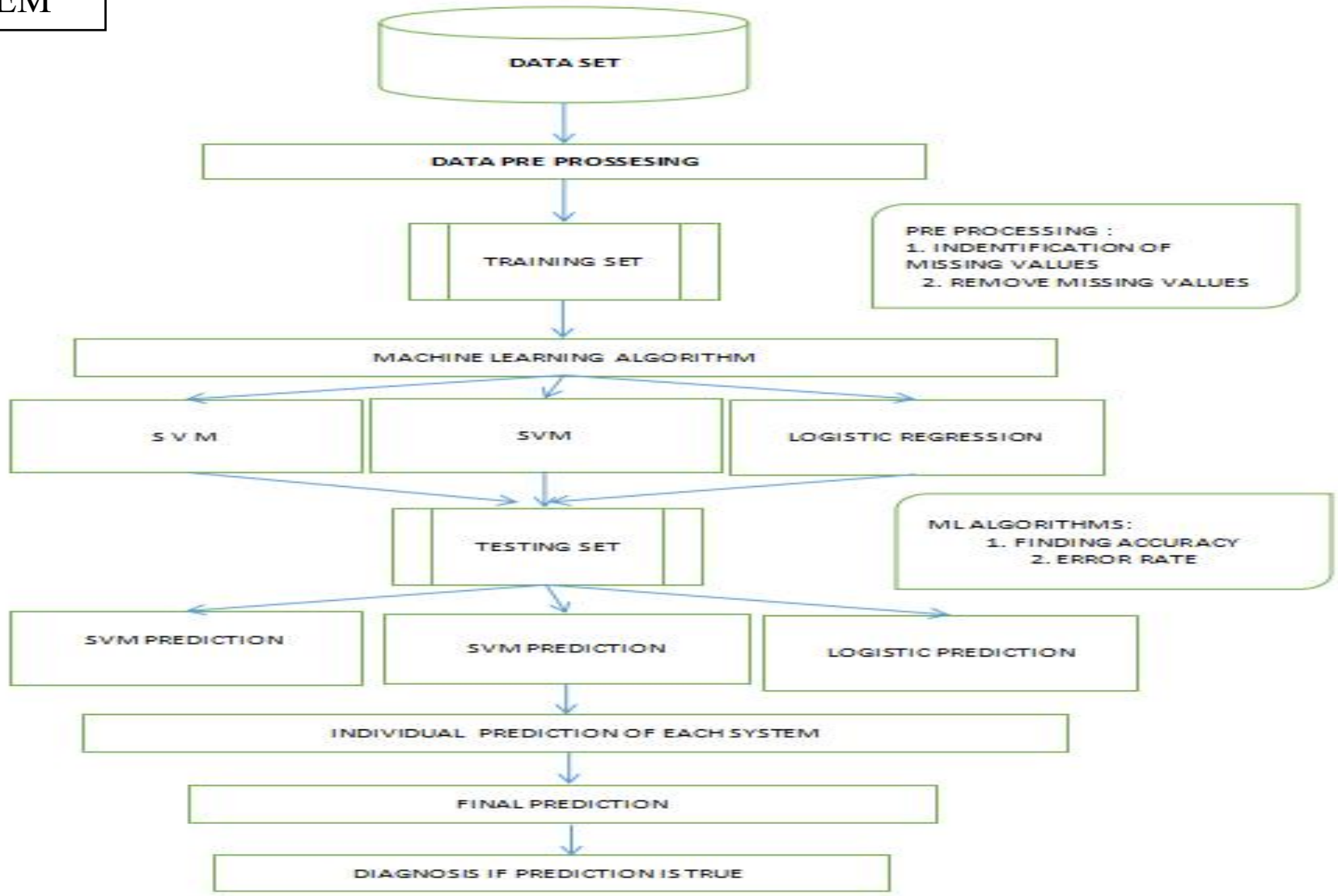
1. Diabetes 2. Blood pressure 3. Heart Disease.

ADVANTAGES :

1. The website has more convenience in usage.
2. Websites don't need large data intake compared with applications.
3. Availability in platforms such as Google Chrome etc, which are preinstalled application features of an android
4. Simple knowledge of weight and other requirements of inputs are necessary.
5. Provides three types of medicines, allopathy, homeopathy and ayurvedic as diagnosis.
6. Results are straight forward, focused mainly on comfort,stress reduction..etc of diagnosed patient.

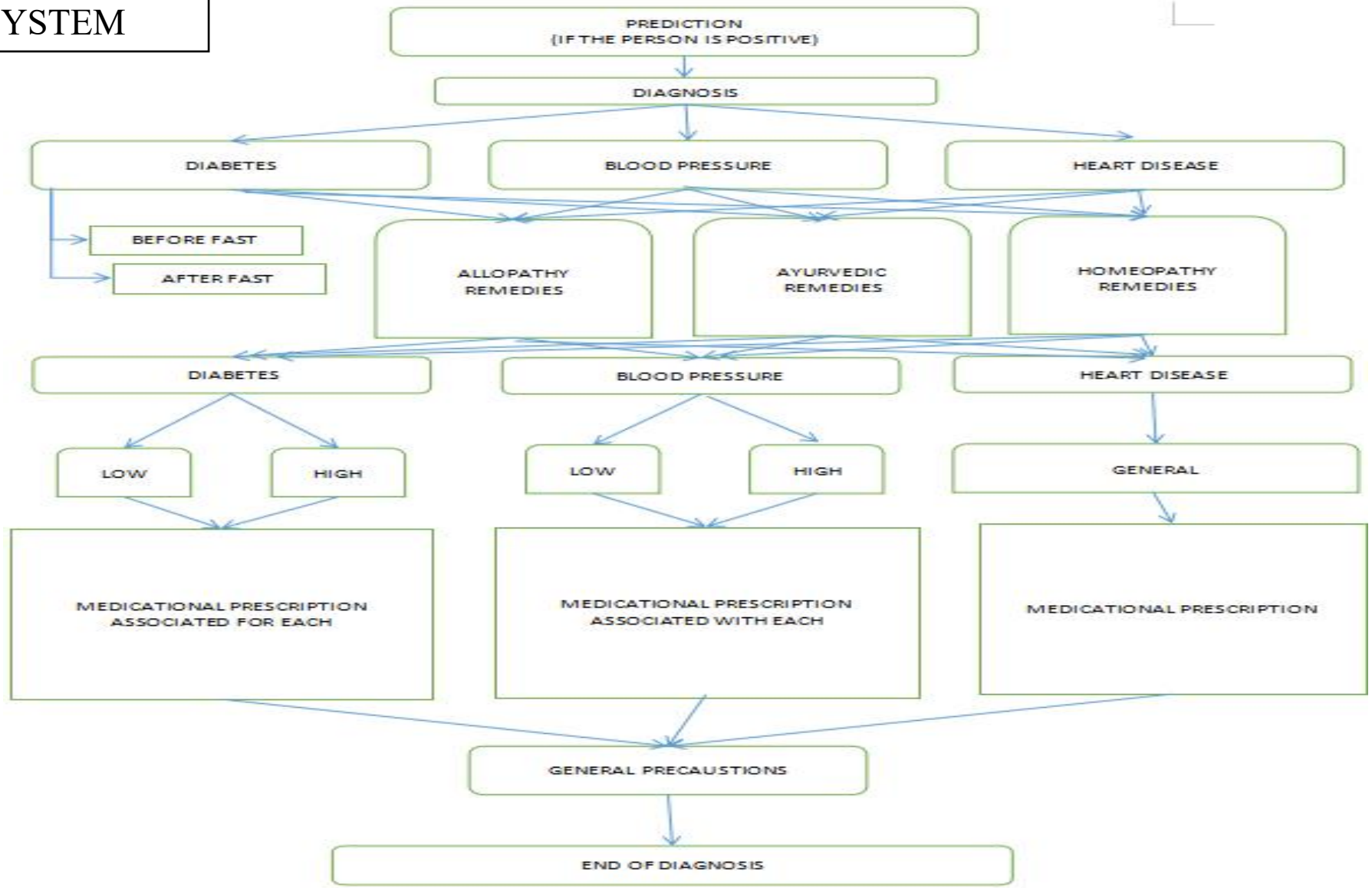
ARCHITECTURE DIAGRAM

❖ PREDICTION SYSTEM



ARCHITECTURE DIAGRAM

- DIAGNOSIS SYSTEM



MODULES

❖ PREDICTION

- Diabetics
- Blood Pressure
- Heart Disease

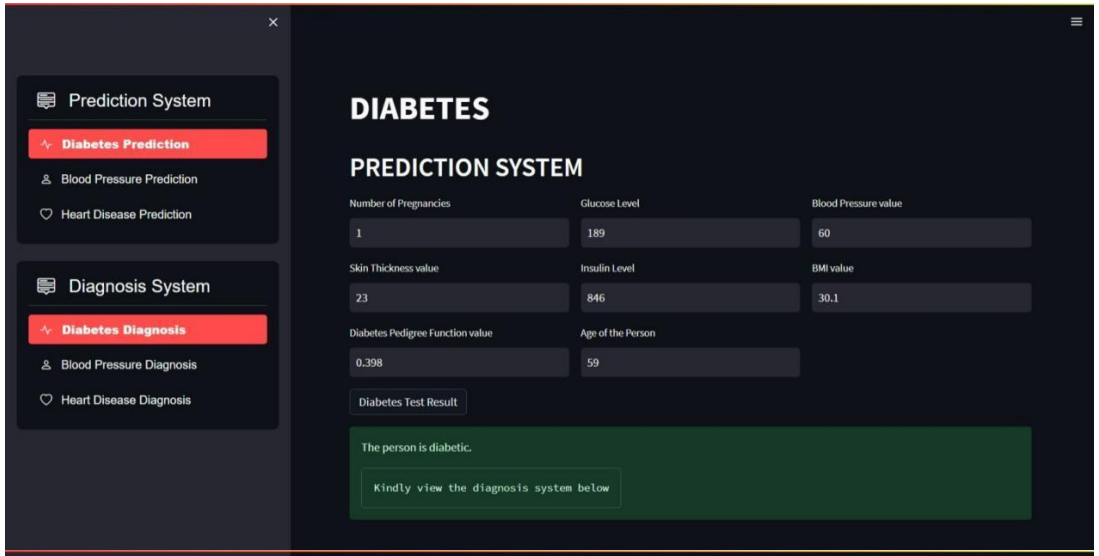
❖ DIAGNOSIS

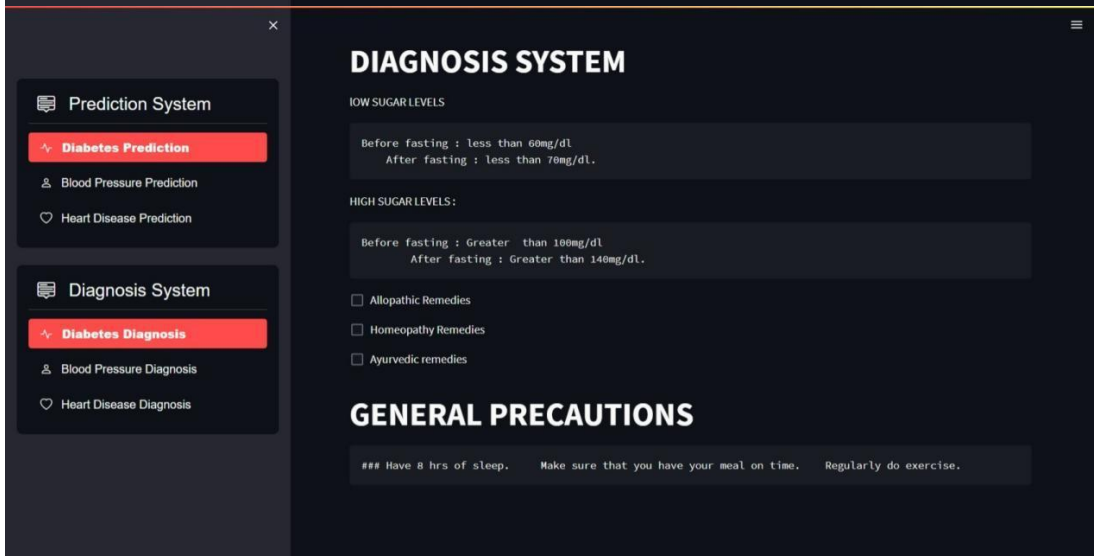
- Diabetics
- Blood Pressure
- Heart Disease

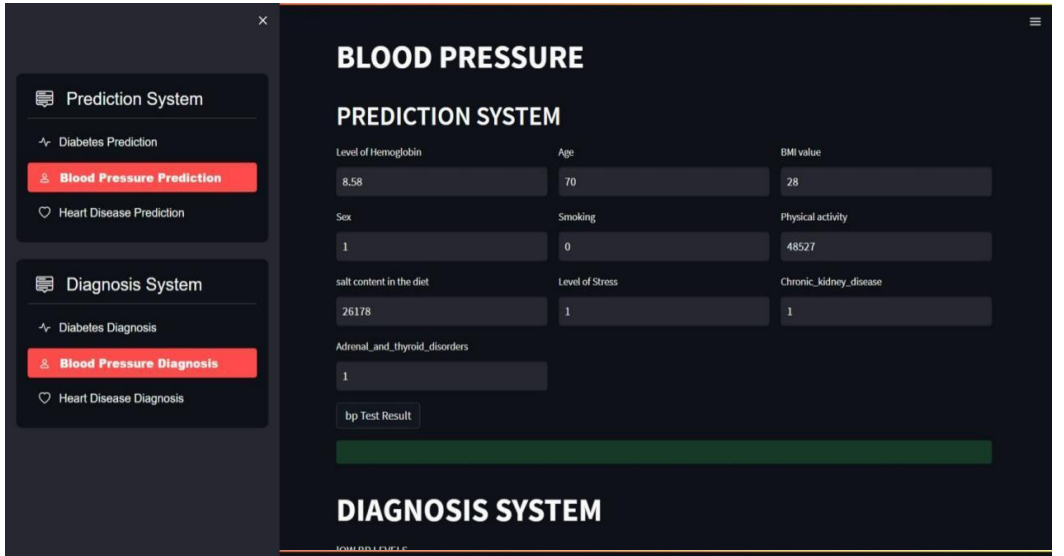
❖ ALGORITHMS

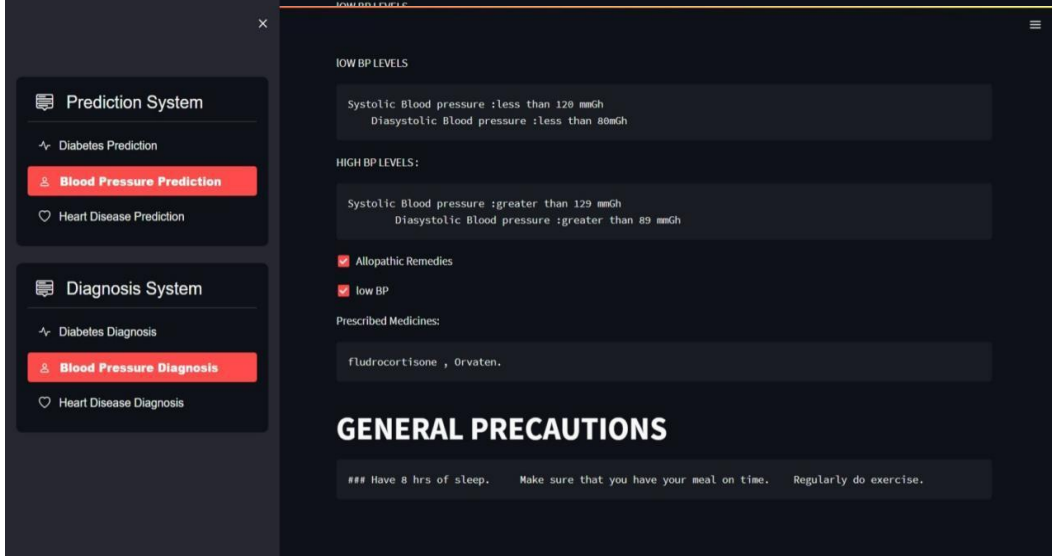
- SVM (Support Vector Machine)
- Logistic Regression

OUTPUT

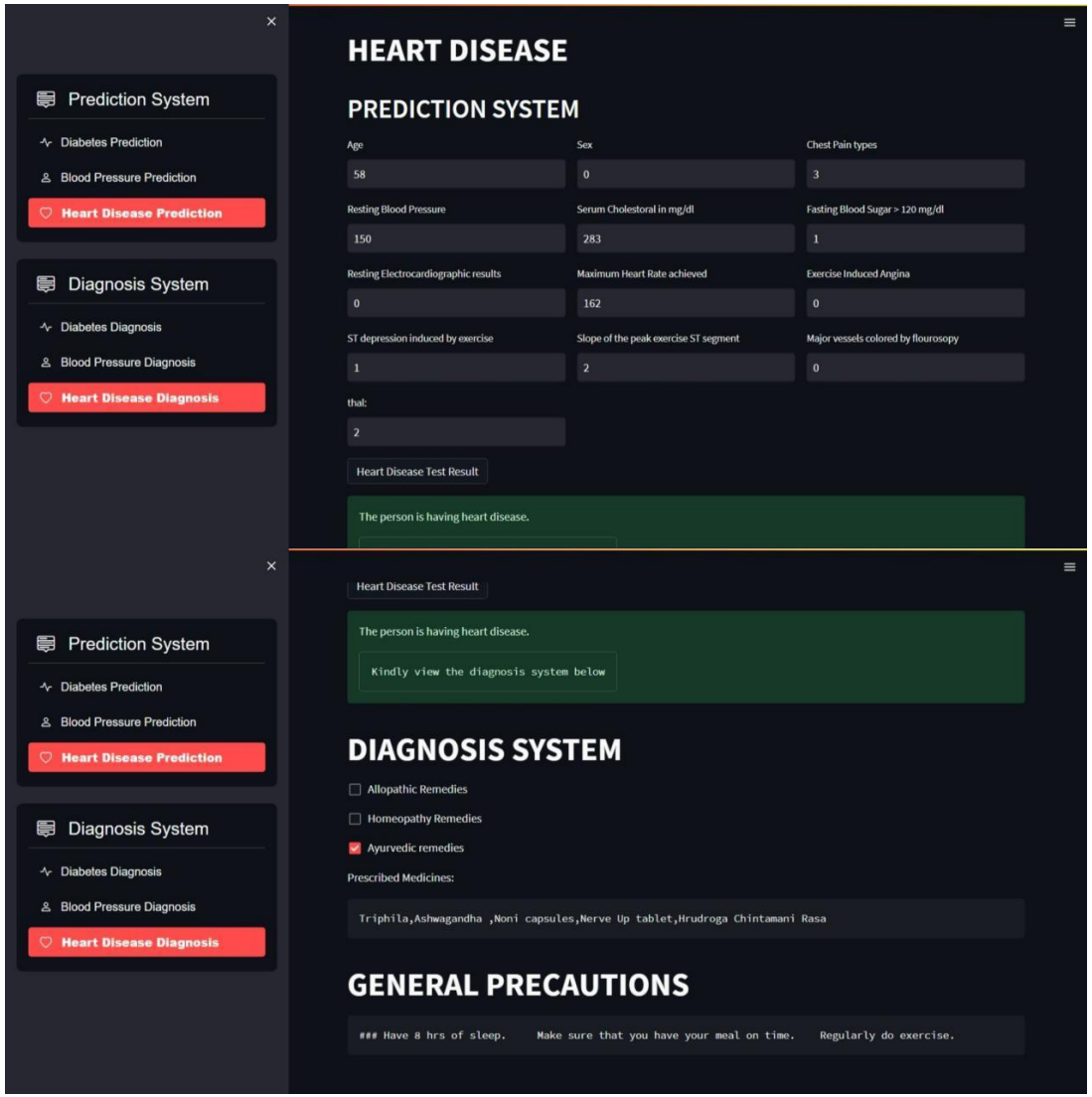

Prediction System
Diabetes Prediction
Blood Pressure Prediction
Heart Disease Prediction
Diagnosis System
Diabetes Diagnosis
Blood Pressure Diagnosis
Heart Disease Diagnosis
DIABETES
PREDICTION SYSTEM
Number of Pregnancies
1
Glucose Level
189
Blood Pressure value
60
Skin Thickness value
23
Insulin Level
846
BMI value
30.1
Diabetes Pedigree Function value
0.398
Age of the Person
59
Diabetes Test Result
The person is diabetic.
Kindly view the diagnosis system below


Prediction System
Diabetes Prediction
Blood Pressure Prediction
Heart Disease Prediction
Diagnosis System
Diabetes Diagnosis
Blood Pressure Diagnosis
Heart Disease Diagnosis
DIAGNOSIS SYSTEM
LOW SUGAR LEVELS
Before fasting : less than 60mg/dl
After fasting : less than 70mg/dl.
HIGH SUGAR LEVELS:
Before fasting : Greater than 100mg/dl
After fasting : Greater than 140mg/dl.
Allopathic Remedies
Homeopathy Remedies
Ayurvedic remedies
GENERAL PRECAUTIONS
Have 8 hrs of sleep. Make sure that you have your meal on time. Regularly do exercise.


Prediction System
Diabetes Prediction
Blood Pressure Prediction
Heart Disease Prediction
Diagnosis System
Diabetes Diagnosis
Blood Pressure Diagnosis
Heart Disease Diagnosis
BLOOD PRESSURE
PREDICTION SYSTEM
Level of Hemoglobin
8.58
Age
70
BMI value
28
Sex
1
Smoking
0
Physical activity
48527
salt content in the diet
26178
Level of Stress
1
Chronic_kidney_disease
1
Adrenal_and_thyroid_disorders
1
bp Test Result
DIAGNOSIS SYSTEM


Prediction System
Diabetes Prediction
Blood Pressure Prediction
Heart Disease Prediction
Diagnosis System
Diabetes Diagnosis
Blood Pressure Diagnosis
Heart Disease Diagnosis
LOW BP LEVELS
Systolic Blood pressure :less than 120 mmGh
Diasystolic Blood pressure :less than 80mGh
HIGH BP LEVELS:
Systolic Blood pressure :greater than 129 mmGh
Diasystolic Blood pressure :greater than 89 mmGh
Allopathic Remedies
low BP
Prescribed Medicines:
fludrocortisone , Orvaten.
GENERAL PRECAUTIONS
Have 8 hrs of sleep. Make sure that you have your meal on time. Regularly do exercise.

OUTPUT


Prediction System
Diabetes Prediction
Blood Pressure Prediction
Heart Disease Prediction
Diagnosis System
Diabetes Diagnosis
Blood Pressure Diagnosis
Heart Disease Diagnosis
HEART DISEASE
PREDICTION SYSTEM
Age
58
Sex
0
Chest Pain types
3
Resting Blood Pressure
150
Serum Cholestoral in mg/dl
283
Fasting Blood Sugar > 120 mg/dl
1
Resting Electrocardiographic results
0
Maximum Heart Rate achieved
162
Exercise Induced Angina
0
ST depression induced by exercise
1
Slope of the peak exercise ST segment
2
Major vessels colored by flourosopy
0
thal:
2
Heart Disease Test Result
The person is having heart disease.
Prediction System
Diabetes Prediction
Blood Pressure Prediction
Heart Disease Prediction
Diagnosis System
Diabetes Diagnosis
Blood Pressure Diagnosis
Heart Disease Diagnosis
Heart Disease Test Result
The person is having heart disease.
Kindly view the diagnosis system below
DIAGNOSIS SYSTEM
Allopathic Remedies
Homeopathy Remedies
Ayurvedic remedies
Prescribed Medicines:
Triphila,Ashwagandha ,Noni capsules,Nerve Up tablet,Hrudroga Chintamani Rasa
GENERAL PRECAUTIONS
Have 8 hrs of sleep. Make sure that you have your meal on time. Regularly do exercise.

CONCLUSION

Diabetes, blood pressure, and heart disease are widespread chronic diseases that affect millions of people worldwide. Early detection and management of these diseases are crucial to prevent complications and improve outcomes. Thus diabetes, blood pressure, and heart disease prediction and diagnosis using web application shown promise in further prediction and diagnosing of various other diseases for people without acknowledgement of gender, ethinicity and free of cost across the world. This project successfully implemented which can further take it to a higher level of producing more features and easy guidance of every step for the users.

REFERENCES

[1] F. Islam, R. Ferdousi, S. Rahman, and H. Y. Bushra, Computer Vision and Machine Intelligence in Medical Image Analysis.

[2] World Health Organization (WHO). (2020). WHO Reveals Leading Causes of Death and Disability Worldwide: 2000–2019.

[3] G. Pradhan, R. Pradhan, and B. Khandelwal, ‘‘A study on various machine learning algorithms used for prediction of diabetes mellitus,’’ in Soft Computing Techniques and Applications (Advances in Intelligent Systems and Computing).

[4] Joshi Rahul and Minyechil Alehegn "Analysis and prediction of diabetes diseases using machine learning algorithm: Ensemble approach" International Research Journal of Engineering and Technology vol. 04 no. 10 pp. 426-435 Oct 2017

[5] Saxena Krati Zubair Khan and Shefali Singh "Diagnosis of diabetes mellitus using k nearest neighbor algorithm" International Journal of Computer Science Trends and Technology(IJCST) vol. 2 pp. 36-43 2014.

[6] A. Frank and A. Asuncion. (2010). UCI Machine Learning Repository. Accessed:Oct. 22, 2021. [Online]. Available:http://archive.ics.uci.edu/ml. [8] G. Pradhan, R. Pradhan, and B.Khandelwal, ''A study on various machine learning algorithms used for prediction of diabetes mellitus,'' in Soft Computing Techniques and Applications (Advances in Intelligent Systems and Computing), vol.1248. London, U.K.: Springer, 2021, pp.